



Watching over Alberta's thriving turkey industry

Vanquishing a vicious virus

Researchers at VIDO conquer turkey "mud fever"

For the past six years, the Veterinary Infectious Disease Organization (VIDO) at the University of Saskatchewan in Saskatoon has been trying to find a vaccine for Hemorrhagic Enteritis—or "HE"—in turkeys. Commonly called "mud fever" or "bloody gut," the affliction plays havoc with turkeys' intestines and immune systems, and costs producers an estimated \$9 million in losses annually. Until recently, there was little that could be done about the condition. But VIDO researchers, led by virologist Dr. Jan van den Hurk, have scored an important breakthrough by developing a safe and effective vaccine. And part of their research was funded by a \$176,819 grant from Alberta Agriculture's "Farming For The Future."

The province has been working closely with VIDO since the organization—which boasts as its motto "to serve the livestock industry through research"—was founded in 1975. The University of Saskatchewan donated five acres of land in Saskatoon and paid the director's salary, while other funding came from the provinces of Alberta and Saskatchewan

and the Devonian Group of Charitable Foundations of Calgary. Last year it operated on a \$1.36 million budget, fuelled largely by \$300,000 from the Saskatchewan government and \$212,000 from "Farming For The Future."

The HE vaccine first surfaced in VIDO labs almost 18 months ago. Field trials in Alberta, Manitoba and Ontario followed. Acme turkey producer Murray Brown, who participated in the on-farm tests, was impressed. "It's a great thing that VIDO's done," he says. "The evidence that this vaccine works is unmistakable."

Commercial sales began in March, although a patent is still pending for Canada, the U.S. and Japan. Meanwhile, Dr. van den Hurk is proud to display the "In Vitro Propagation of Group II Bird Adeno Virus" patent that he was issued by the European Patent Office last October.

Both the researcher and the turkey trade have a right to rejoice about the discovery of a treatment for this ugly affliction, which was first diagnosed in

Minnesota almost 50 years ago. It usually strikes birds five to six weeks old, weakening the walls of their blood vessels and causing intestinal hemorrhaging. The symptoms are a wet, sticky—and after it is allowed to progress, a bloody—diarrhea. The condition isn't usually fatal, but it lengthens the time required to get the birds to market and therefore increases producers' feed costs. And it acts as an "immuno-suppressant," says Dr. van den Hurk. "By weakening turkeys' immunity systems," he says, "it allows other diseases to further reduce the health of the birds." Says Dr. Keith McMillan, a Red Deer veterinarian who helped conduct the field trials: "There's no evidence whether the HE virus causes permanent or temporary damage to the immune system,

Continued on back cover

INSIDE:
**A message from
the Deputy Minister**

Maintaining a farm family

FAMEX is studying how much it costs

Alice Young, who runs a 640-acre mixed farm with her husband Robert near Millet, is one of those organized people who saves receipts. As she unpacks her grocery bags, for example, she neatly itemizes the cash register tapes and files them away. But she never did much with them, until she saw an advertisement in the *Wetaskiwin Times* asking for volunteers for a joint Alberta Agriculture-University of Alberta study on farm families' living expenses. Now, after taking part in the program, her files are organized to the point of being a personal, accurate source of financial planning and accounting . . . which could save the Youngs hundreds of dollars in professional assistance each year. And thanks to an innovative "Farming For The Future" research program underway called "FAMEX," other Alberta families like the Youngs are also learning how to better manage their money.

The name "FAMEX" is an acronym for "FAMily" and "EXpenditures." The project grew from earlier efforts by Kathleen (Kay) Dean, Alberta Agriculture's district home economist for Stettler. The complexity of keeping detailed financial records and realistically estimating family living expenses was a recurring problem with many of the producers she dealt with. So she had six co-operative householders maintain supervised, orderly journals of their spending for 12 months.

The results were shocking. "Five of the six expressed disbelief at the amount it took to support their family," recalls Miss

Dean. The actual sums, according to the participants' journals, ranged from \$14,000 to \$20,000, while estimates had been as low as \$5,000.

Meanwhile, Alberta Agriculture's Home Economics Branch in Edmonton was facing some harsh facts. With financial problems on the farm horizon, families simply had to manage their money as efficiently as possible. But in order to provide planning assistance to them, the branch felt it needed a wider sample of their spending habits than Miss Dean's survey afforded. So Alberta Agriculture's "Farming For The Future" research program stepped forward with a \$55,800 grant to expand the program to 450 families.

Jean Wilson, a family resource man-

agement specialist with the branch who is spearheading "FAMEX" with T.A. "Alf" Petersen, Professor Emeritus of Rural Economy at the University of Alberta, has asked district economists across the province to find at least six families in their regions that will take part. Every participant will be supplied with "COPE" record books, a detailed list of what to include under the program's 15 expenditure categories, and bi-monthly newsletters offering tips and encouragement. If receipts are kept faithfully, Miss Wilson estimates weekly tabulations should only take 30 minutes. When the program finishes next summer, the families will return summary sheets to the researchers.

They do have some background research, besides Miss Dean's, for compari-

Family
manag
Jean W

All roads lead to Lacombe

Barley breeding sparks global interest

Lacombe (pop. 5,964) sits astride old highway 2A about 110 kilometres south of Edmonton. Lately, scientists and agricultural producers from around the world have been making lengthy pilgrimages to the central Alberta municipality. Last month, delegations from Montana and South Korea visited the Alberta Agriculture research facility. The man they all want to talk to is Dr. James (Jim) Helm, a plant breeder, and Head of the Lacombe Research Section, Field Crops Branch. They, along with Chinese and Soviet visitors before them, are awestruck by Dr. Helm's 390-acre plant breeding program. Financed by \$750,000 from Alberta Agriculture (the department's single largest annual re-

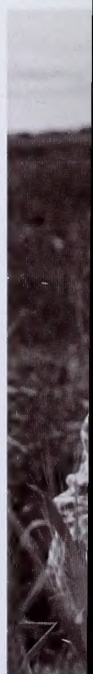
search appropriation), Dr. Helm has introduced several new varieties of barley developed at the world-class facility. "There are only two other barley breeding projects of this size, one in Syria and another in Mexico," he says.

The goals of the Lacombe station's barley breeding program are many. "We're trying to re-arrange genetic material in order to get a better product," says Dr. Helm. That includes earlier maturity dates, greater disease resistance and increased response to intensive management practices. "We cross varieties of barley," says Dr. Helm, "to produce new types which have the strengths of the best, and fewer weaknesses." But two of the bigger problems, he says, are "lodging"—the bending

and breaking of the plant caused by heavy rains, wind or hail—and low "lysine" levels. To counter lodging, researchers have been experimenting with "dwarf" and "semi-dwarf" barley varieties that have a tougher straw. But trying to bolster lysine, an amino acid in protein which all animals need but cannot produce themselves, is a tougher assignment. "Plant breeding is an extremely slow process," says Dr. Helm, "and high lysine breeding seems to be particularly difficult."

But given the significance of barley to Alberta producers, they forge on. Farmers here harvested 4.64 million tonnes of the feed grain in 1984-85, worth about \$577 million. About 2.4 million tonnes were consumed in Alberta, with all but 450,000 tonnes designated for livestock feed. "Given these kinds of figures," says Dr. Helm, "this type of research is very necessary to producers. As in any industry, demands and needs are constantly changing, and a particular variety will only last about 10 years before it has to be replaced."

Emascu



son. A pilot study was conducted last year by Alberta Agriculture's Home Economics Branch with 62 northeast Alberta families—including the Youngs—to provide a glimpse of what the larger FAMEX project might reveal. Results showed that family-oriented expenditures devoured about \$25,844 of the average \$116,000 gross farm income. This made a substantial impact on the average net income which was about \$23,500. To maintain their lifestyles—or, in some cases, to just make ends meet—about 33% of husbands and wives worked off-farm.

However, there were wild variations in the sample that convinced the researchers this test “did not provide information on the ‘average’ farm family, despite indicating what some are actually spending on consumption.” So “Farming For The Future” is helping them achieve a better overall picture. And there’s good reason. Jim Loughheed, a University of Alberta farm records specialist, says that compared to their urban counterparts, farm families’ living costs are much more variable and arrive in large but irregularly spaced and unpredictable amounts. “Most farmers,” he says, “judge their spending on how much money is available. Not a lot of budgeting goes on until they’re in a pinch. The trouble is, things can change pretty quickly—they can have four animals die on them and that could have been their profits.”

But no one will have to sell Mrs. Young on the benefits of orderly records. She hasn’t stopped utilizing the lessons she learned from taking part in the home economics program. Mind you, she never was a spendthrift. “We grew up during the Depression,” she says, “and some financial ‘habits’ we developed then will never go away.”

tical in Lacombe



FARMING FOR THE FUTURE



by Ben McEwen
Deputy Minister
Alberta Agriculture

Last month, when Art Olson welcomed you to the first edition of *Research Report*, he invited your comments and suggestions. We have been overwhelmed by your response, and thank you for taking the time to write.

Your enthusiasm for what’s new and innovative in agriculture is a most positive indication that together we can work our way out of the difficult situation the industry faces. To help translate that enthusiasm into action and results, Alberta Agriculture has developed a long-term research strategy to take us into the 1990s . . . and beyond.

As I see it, there are a number of major problems impeding agricultural progress in this province. They are:

- Declining net farm income as a result of intense competition in international markets;
- Low capacity for agricultural processing;
- Deterioration of the productive capability of our farm land as well as natural hazards to agricultural production such as last year’s drought and this year’s flooding; and
- Limited economic and agri-business management information.

Research is no magic wand. We just can’t point it at the problems and have them go away. Research is hard work, directed towards a goal, and supported by adequate financing—just like farming.

But consider the benefits.

First, it can improve the province’s competitive position in those tough world markets by helping to identify and gain a greater share for Alberta and Canada. Our chances of success can be enhanced through crop diversification, and by developing alternative varieties and strains suited to Alberta’s climatic and soil conditions. Finding ways to halt the deterioration of soil damaged by drought, floods and improper use will ensure a brighter future yet. Of course, having access to unfolding economic information and better farm management techniques will make our decisions even more sound.

In addition, we must encourage the development of new products, new processing methods and new food and non-food uses for familiar farm commodities. Finally, by harnessing “hi-tech” innovations like biotechnology, our crop and livestock production will be ready for the challenges of the next decade and century.

As you can see, the necessary research effort will be complex, varied and expensive. That’s why it’s so important that our efforts and spending—be they public, private or academic—be co-ordinated to maximize results. The emerging Alberta Agricultural Research Institute could be such a co-ordinating body, calling the research signals, keeping track of the game plan, and balancing long and short-term needs. I hope to be able to report to you again soon on its progress.

Thank you for your continuing interest and enthusiasm for agricultural research.

How sweet it is

Transplanted sugar beets produce better yields

Zoltan Gergely's curiosity was piqued. While leafing through the *Sugar Beet Producer* (a trade magazine for that commodity), the Coaldale farmer spied a story about a sugar beet transplanting program in Caldwell, Idaho, that reportedly led to higher yields. So he and his

netting about \$45 a tonne, that means their income from one acre of land would be about \$880 instead of \$590. "The project," says Mr. Gergely, "was very encouraging."

Last April the Gergelys rented a greenhouse, and with their staff carefully planted sugar beet seeds in 196 paper pots.



Zoltan Gergely: "The project was very encouraging."

brothers Ted and William took a few days off and travelled to see the project firsthand. And they were so impressed with the American experiment that they decided to try the same thing here.

They're glad they did. After receiving an \$11,254 grant for an Alberta Agriculture "Farming For The Future" On-Farm Demonstration project last growing season, they watched a transplanted sugar beet plot yield 19.57 tonnes per acre, while a seeded "control" plot produced just 13.12 tonnes per acre. With beets currently

These were watered two or three times daily, and kept at 25–30 degrees Celsius during the day. At night, the temperature was lowered to just 5–6 degrees Celsius, to condition the seedlings for transplanting and simulate a true Alberta field situation.

Thirty-five days after the seeding took place, the Gergelys were ready to transplant their seedlings, which now sported three or four leaves and stood four inches tall. But because negotiations between their marketing board and the contractor

were incomplete, they delayed the transplant for another month.

This postponement was crucial. The plants were getting big, and needed transferring quickly. Furthermore, the growing season was wearing on. Finally, on June 3 they transplanted two acres, one manually and another with a seed drill that performed poorly, because the plants had grown too large and the soil was laden with rocks. They also seeded a "control" plot.

The transplanted seedlings went into what Mr. Gergely remembers as "severe shock." But still, they went on to become better performers than those in the control plot. Despite the late planting, a full 95% reached maturity, compared to just 60% for the late-planted seeds. And they grew bigger. Says Michael Clawson, district agriculturist in Lethbridge who oversaw the project: "Transplanting produced beets about one-third heavier. They grow larger because the time in the greenhouse adds around three weeks to their growing time. It can reduce seedling loss from high winds, dryness, low temperatures and insects."

Mr. Gergely was pleased. "By planting sugar beets conventionally," he says, "in an average year I would get 16 to 17 tonnes per acre. But even with the shortened season, I still got better than average yields."

Given his success, Mr. Gergely thinks sugar beet transplanting in a Canadian environment should be studied further. Indeed, there's still no real measure of how much his greenhouse expenses would have eaten into his income from production. And then there's a need for better transplanting machinery. So Mr. Gergely, research scientist Dr. Peter Bergen, a representative of sugar beet equipment manufacturer Kirchner Machines of Lethbridge, and an Alberta vegetable grower are going to Japan next year to study the design and production of sugar beet transplanters made there for the U.S. market. "If these machines could be made economically in Canada," says Mr. Gergely, "transplanting methods could more widely be applied to many types of vegetables like carrots, corn, tomatoes, red beets, cabbage and cauliflower."

VIDO's vicious virus vaccine . . . Continued from front cover

but there's no doubt that it's affected."

In the past, a vaccine taken from the spleens of birds infected with an "avirulent" strain (one that does not overcome the body's defence mechanisms) of HE was used to treat sick turkeys. However, the vaccine was difficult to manufacture in large quantities and with consistent quality. The new vaccine, though, is produced by a still-secretive process whereby healthy turkey white blood cells are infected with the virus. They then build up an immunity. "The turning point," says researcher van den Hurk, "came with the development of the tools

which allow us to inspect cells for suitability to grow the virus." With this advanced level of cell selection, he is able to eliminate those cells containing other organisms, and create a pure vaccine. However, until all patents are secure, he's reluctant to make too many details public.

Application, though, is no secret. A \$170, 50-gram vial, which will service 5,000 birds, is simply mixed in with the flock's drinking water. The vaccine, being produced commercially in Guelph, Ontario, by Langford Inc. and marketed under the trade name "HEVLAN TC" (for "tissue-culture" produced), is available

only from veterinarians. What does it cost an average producer? "I vaccinated 12,500 turkeys at a total cost of \$510 for three vials," says Mr. Brown, "and still didn't use it all. That's a very inexpensive treatment."

Since every province has a turkey industry, a breakthrough like this will be felt Canada-wide. Last year, 16.8 million turkeys weighing a collective total of 223 million pounds were slaughtered across the country. Most came from Ontario, Quebec, B.C. (1.58 million birds) and Alberta (1.48 million birds). And that figure should only increase.